Development and refinement of three animal-based broiler chicken welfare indicators

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Introduction

Animal welfare assessment may include animal- and resource-based indicators. The use of animal-based indicators to assess animal welfare has been encouraged (Veissier et al. 2008; Rushen et al. 2011; European Food Safety Authority [EFSA] 2012; World Organisation for Animal Health [OIE] 2013) and applied for regulatory purposes (European Commission 2017). The Welfare Quality® project proposed to standardise animal welfare assessment through the application of predominantly animal-based, scientifically validated measures (Blokhuis et al. 2010) and it has been considered a robust tool to assess animal welfare (Webster 2009). The protocol for poultry includes measures of welfare related to four principles, i.e good feeding, good housing, good health and appropriate behaviour (Welfare Quality® 2009).

Recent studies applying the Welfare Quality protocol® (2009) to assess broiler chicken (Gallus gallus domesticus) welfare suggested a need for refinement of some animal welfare measures. For example, Federici et al. (2016) reported difficulties in assessing plumage cleanliness using the Welfare Quality protocol® scoring system, since birds assessed on-farm were poorly feathered on the breast. The visual eight-point scale developed by Wilkins et al. (2003) to assess plumage cleanliness at the slaughterhouse was transformed in a four-point scale in the Welfare Quality protocol® to be assessed on-farm. However, type of soiling and bird feathering presented in the protocol pictures are not representative of the conditions observed in commercial farms for fast-growing broiler chickens. Previous studies have assessed bird cleanliness (Weeks et al. 1994; Elwinger 1995; Dawkins et al. 2004); however, details on the method used were often missing (Arnould et al. 2009), suggesting the need for an updated scoring system.

A possible shortcoming in current broiler welfare assessment protocols is the absence of an effective measurement for contact dermatitis in the ventral body area for broiler chicken flocks, especially considering the high prevalence of contact dermatitis reported for other body parts, such as the foot-pads and hocks (Souza et al. 2015; Tuyttens et al. 2015; Federici et al. 2016). The Welfare Quality protocol® (2009) provides a scoring system to assess the presence or absence of breast blisters. According to Greene et al. (1985), flocks showing a high prevalence of foot-pad dermatitis are expected to also present other forms of contact dermatitis.